



Multisectorial Community Engagement to Address Environmental and Social Components Affecting Maternal and Child Health

SRP Program - Northeastern University
University of Puerto Rico, Medical Sciences Campus

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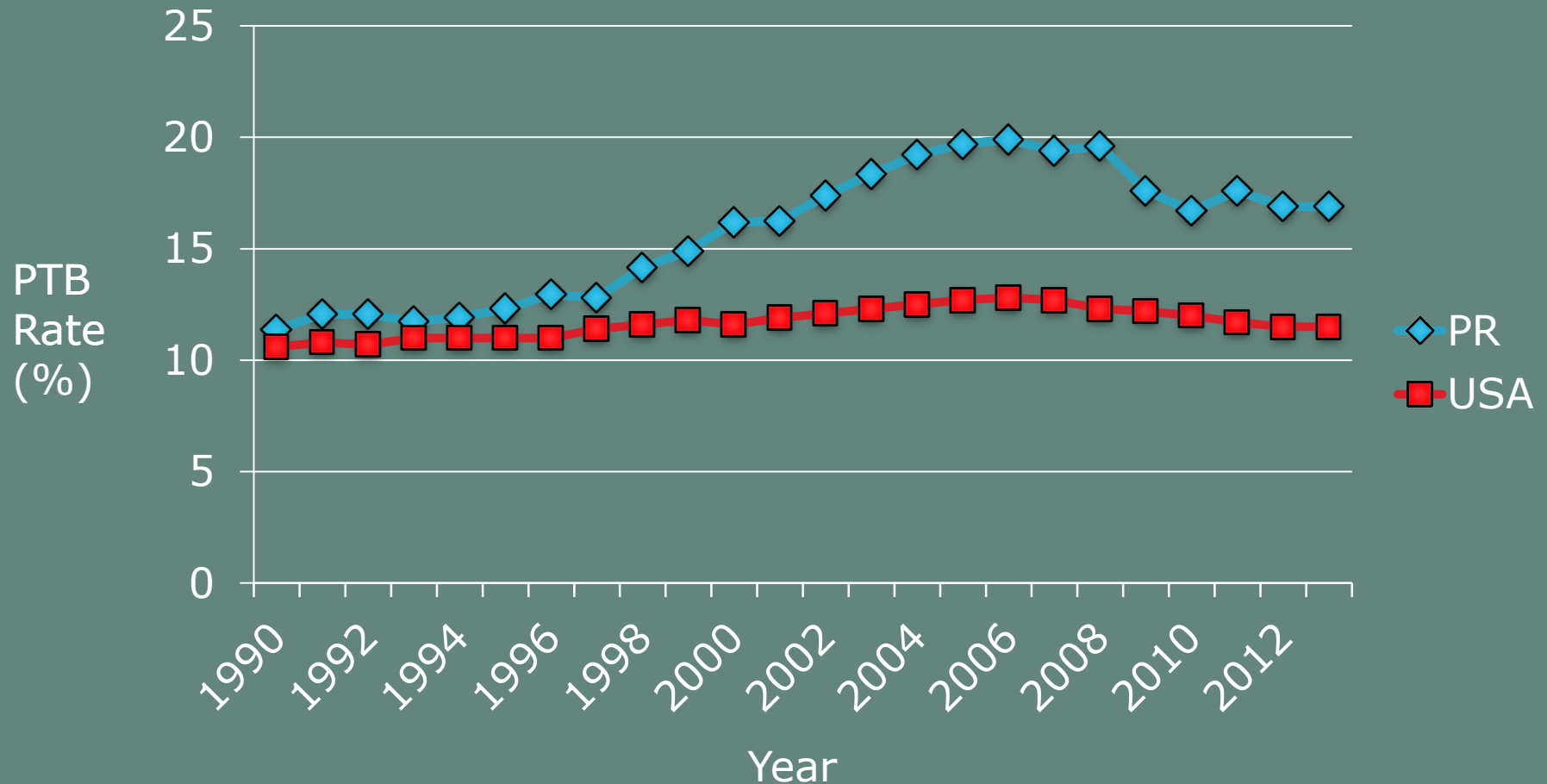
Preterm Birth: A Worldwide Public Health Issue

- Global progress in child survival and health to 2015 and beyond cannot be achieved without addressing **preterm birth** (WHO, 2013).
- In 2012, approximately 15 million babies were born preterm worldwide. ¹
- Complications are responsible for 35% of the world's 3.1 million annual neonatal death.²
- Across 184 countries, the rate of preterm birth ranges from 5% to 18%.
 - **US among the Top 10 countries with highest rate**
 - **Puerto Rico 2nd highest rate of preterm birth worldwide**

1. Blencowe, H., Cousens, S., Oestergaard, M., Chou, D., Moller, A., Narwal, R., Adler, A. & Vera-Garcia, C. (2012). *National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications*. Geneva, CH: World Health Organization.

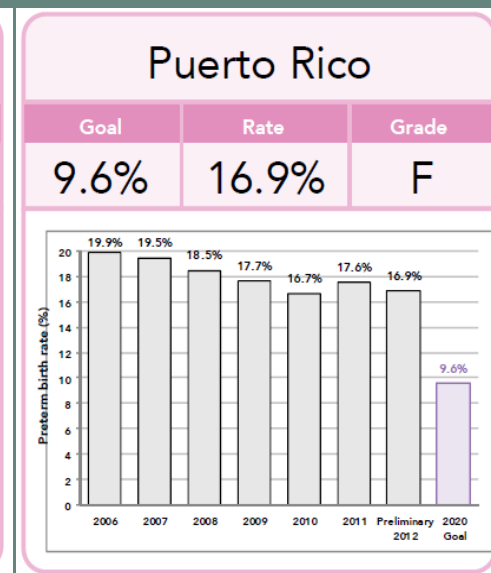
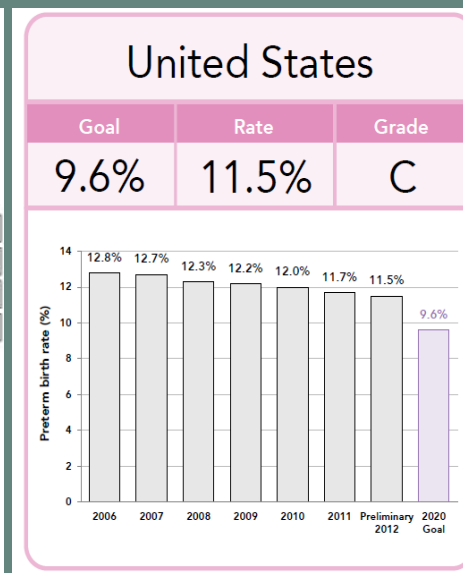
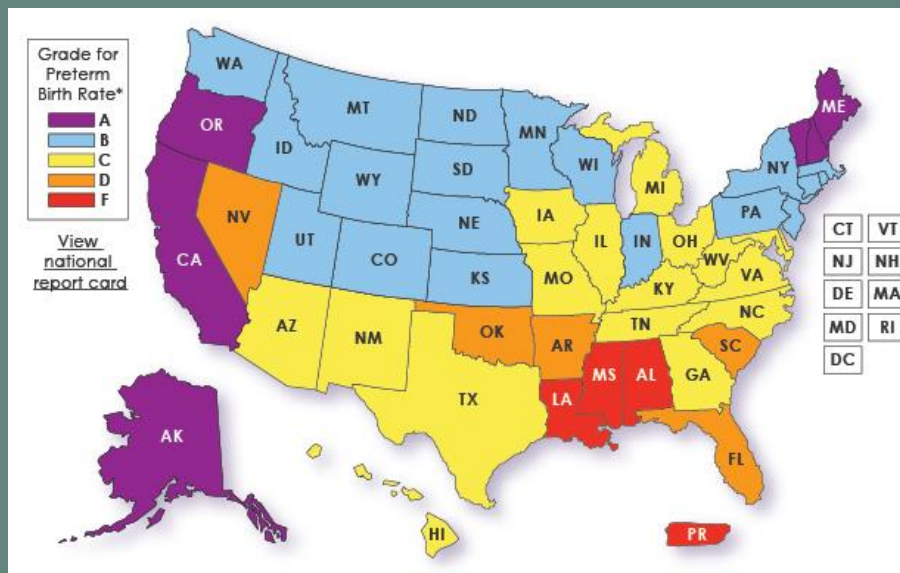
2. Liu L. Johnson H, Cousens S, et al, for the Child Health Epidemiology Reference Group of WHO and UNICEF. Global, regional, national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet* 05, 2012.

Preterm Birth Rates: Puerto Rico and the United States, 1990-2013



Preterm Births, United States and Puerto Rico

March of Dimes 2013 Premature Birth Report Card



Babies born before 37 completed weeks of gestation are considered preterm.

Puerto Rico has the **highest rate** (17.7%) of any U.S. jurisdiction

Below only Malawi (18.1%) globally.



Changes in Risk Factors for Preterm Birth: Puerto Rico and US, 1990 and 2010

Risk Factor	Puerto Rico		United States
	1990	2010	2010
Early prenatal care	71.3%	75.8%	73.1%
Maternal education	66.6%	80.9%	80.1%
Multiple gestations	1.7%	1.9%	3.5%

Trends in factors do not seem to explain the high preterm birth rate of Puerto Rico



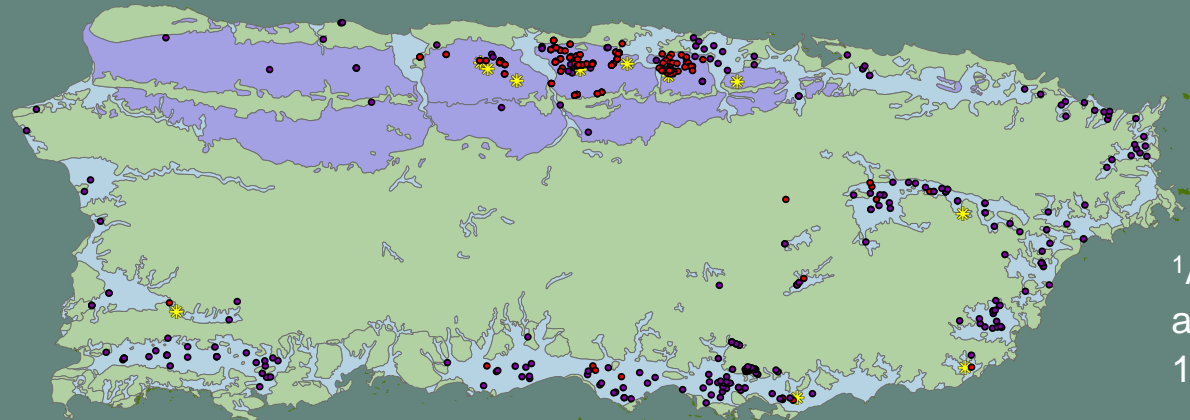
Potential Contribution of Environmental Contamination

Several studies¹ have related

Contaminant Exposure to Adverse Reproductive Outcomes

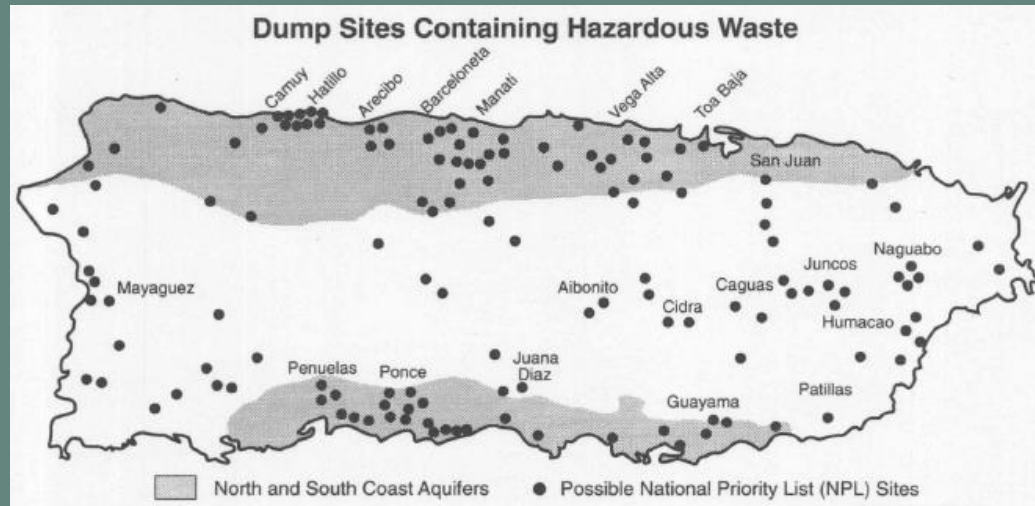
- Phthalates
 - Chlorinated solvents (e.g. TCE)
 - Pesticides
 - Heavy Metals
- Reproductive damage
 - Preterm birth
 - Prenatal mortality
 - Spontaneous abortions

All have been found in groundwater in Puerto Rico



¹ATSDR, 2007; CERHR, 2006; Latini et al., 2003; Ha and Cho 2002; Khattak, 1999; Lipscomb and Fenster, 1999

Contamination in Puerto Rico



Study Site



Superfund Sites in Puerto Rico: 3 sites were listed on NPL early 1980's (1983, 1984, 1984) and 3 sites listed recently (1999, 2003, 2006)
Contaminants include VOC's (Tetrachloride, Trichloroethylene), pesticides, heavy metals (lead, copper, chromium) and phthalates.

PROTECT

Puerto Rico Testsite for Exploring Contamination Threats

Scientific Knowledge – Technology Transfer – Information for Public – Trained Workforce

Enrichment cores
enhance PROTECT
products and outcomes

Research project
integration enhanced by
mutual use of support cores

Contaminant exposure
analyzed from source
to outcome

A Administrative

5 Green Remediation



4 Fate and Transport



Environmental

B Research Translation

D Data Management and Modeling



C Human Subjects and Sampling



F Community Engagement

3 Nontargeted Chemical Analysis



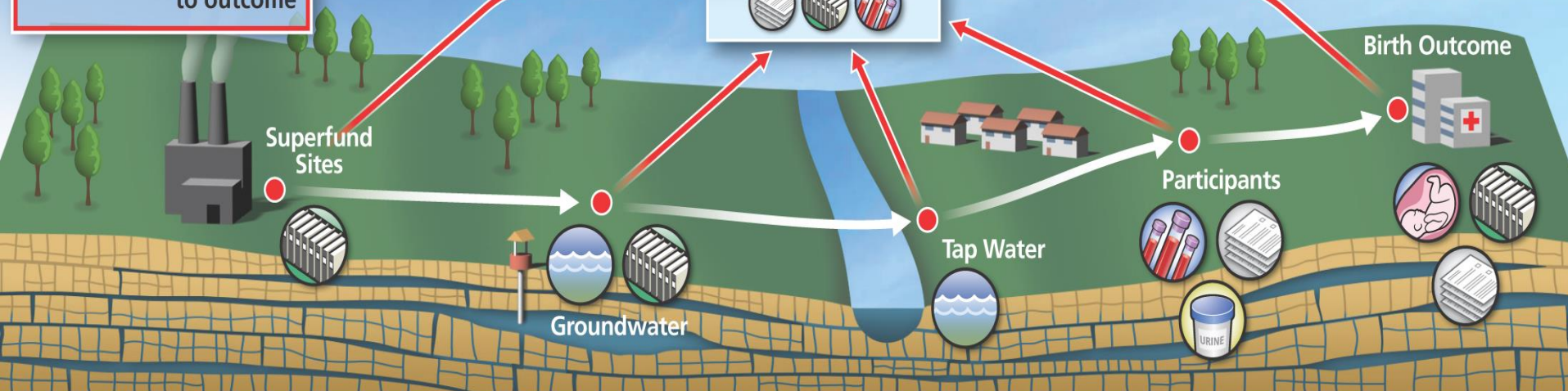
2 Mechanistic Toxicology



Biomedical

E Training

1 Targeted Epidemiology



Key:



Records



Data



Questionnaires



Blood



Urine



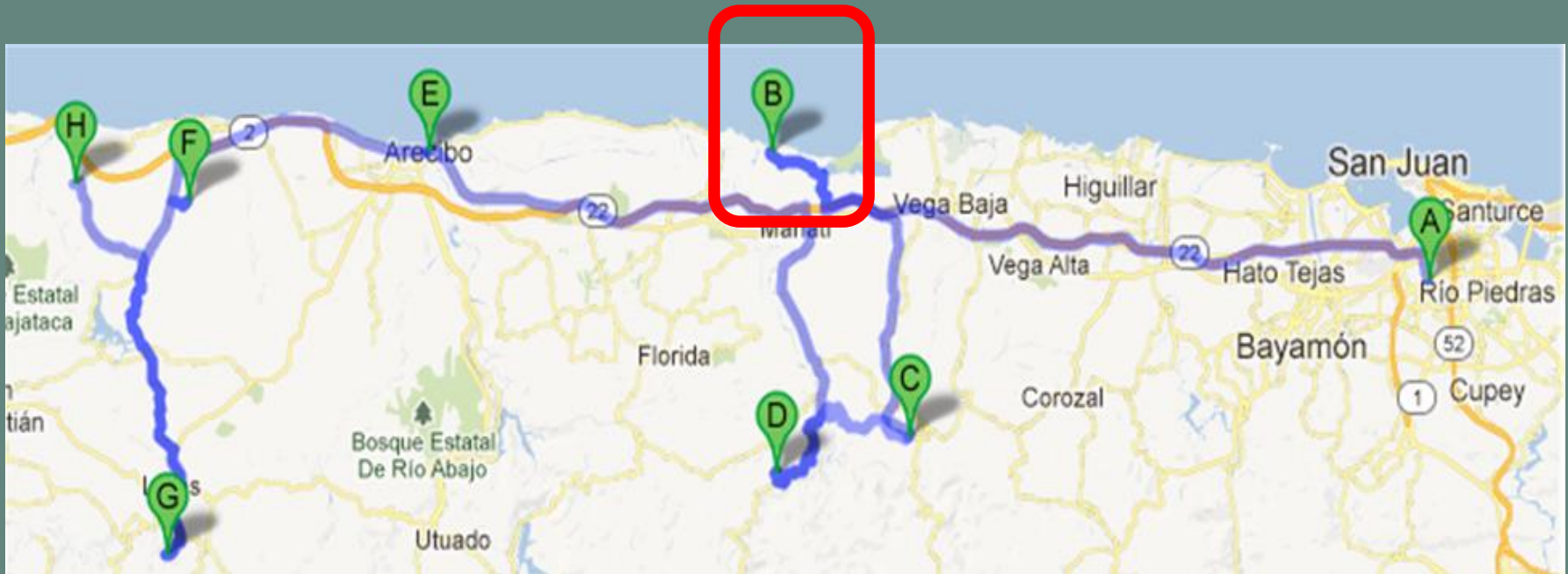
Water



Placenta

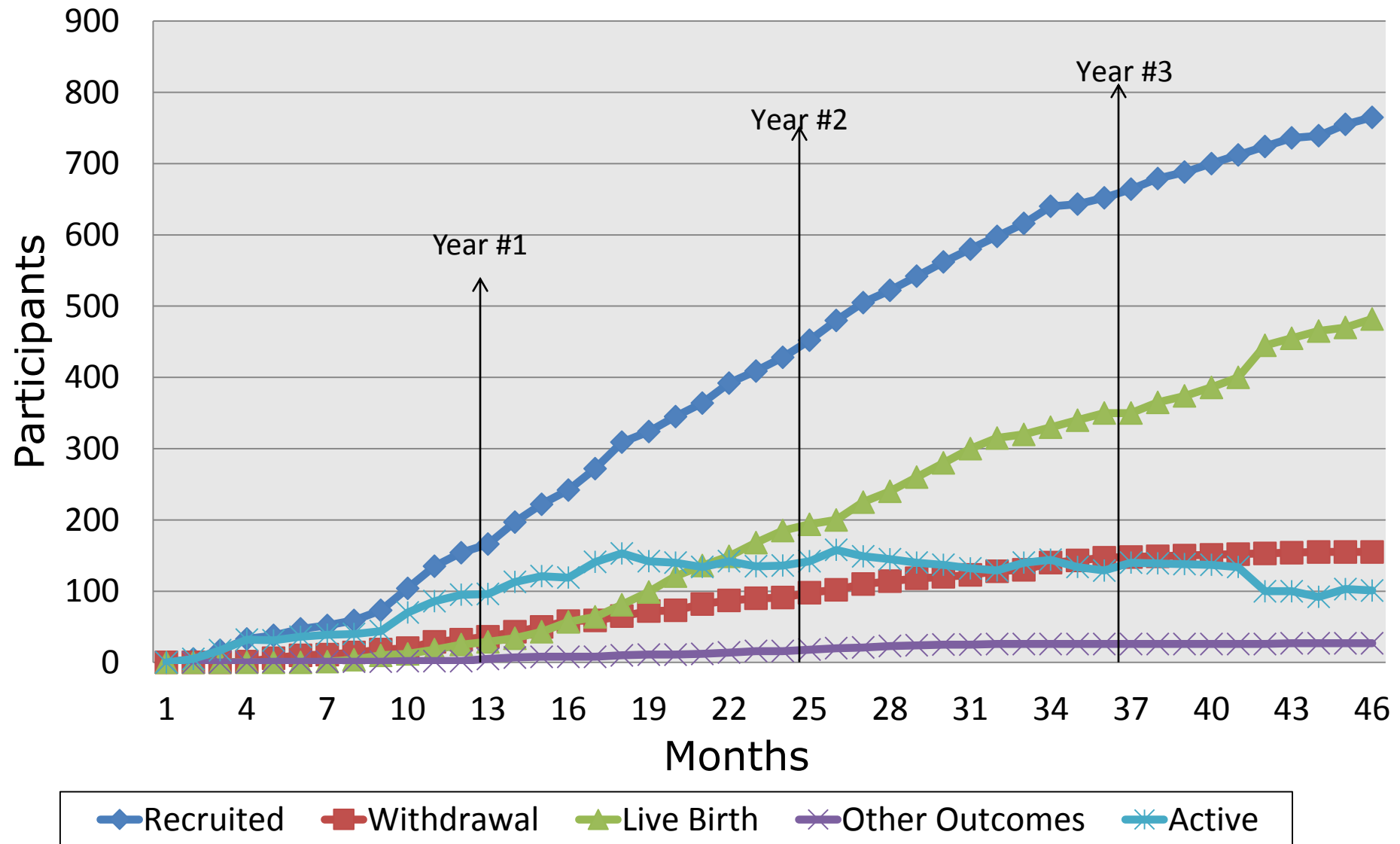


Recruitment Sites Northern Puerto Rico



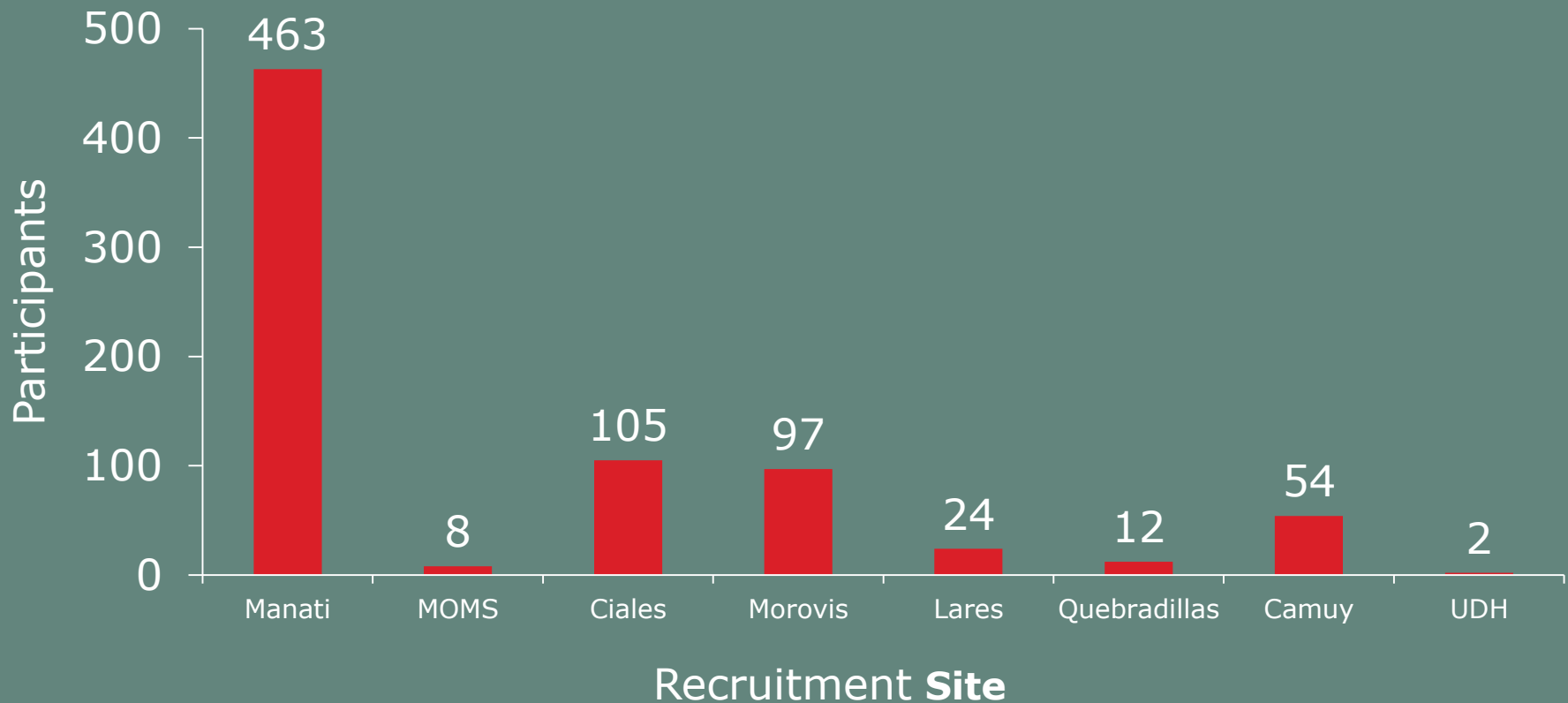
- **Federally Qualified Health Centers (Local Community Clinics):** Morovis (C), Ciales (D), Camuy (F), Lares, (G), Quebradillas (H)
- **Private Practice OB/GYN -** Delta OB/GYN (B)
- **Affiliated Hospitals:** UPR District Hospital (A), Manatí Medical Center (B), Cayetano Coll y Toste (E)

Recruitment Tracking and Outcomes: Puerto Rico, February 2011 – October 2013





PROTECT Recruitment by Type of Prenatal Clinic (n=765): 2011- 2014





Core C Recruitment Strategies: Building Trust among the Community

- Field team
 - Trained Healthcare professionals
 - Key to the recruitment and follow up activities
 - Increased response and retention rates
 - Team engaged in the planning process and implementation of the research protocol
 - Bidirectional communication
 - Learn from the community, exchange ideas and enhance and improve the recruitment process



Community Engaged Recruitment

- Participant engagement
 - Interviewers
 - Dedicate appropriate amount of time to recruitment and follow up activities
 - Foster a community-engaged dialogue
 - Ethics
 - Information of interest as study participant and community member
 - Websites: PROTECT, March of Dimes, SRP, EPA
- Recruitment Site Staff Engagement
 - Fosters and ensure trust among project staff and key personnel at recruitment sites
 - Builds trusts and new partnership
 - Increase community acceptance



Retention strategies

- **Promoted Project identity** = “PROTECT”
 - Increases bond with participants, community and study site
 - Project more recognizable in the field – increases acceptance in the community
- Establishment of a **Call Center**
 - Continuous contact with study participants
 - Updated contact information
- Frequent **meetings** at the Prenatal Clinics
 - Engage personnel and community in the project
 - Local community
 - Physician – OB/GYNS, Pediatricians, General Physicians
 - OB/GYN nurses
 - Laboratory Personnel
 - Health educators and social workers
 - Progress of the activities and feedback



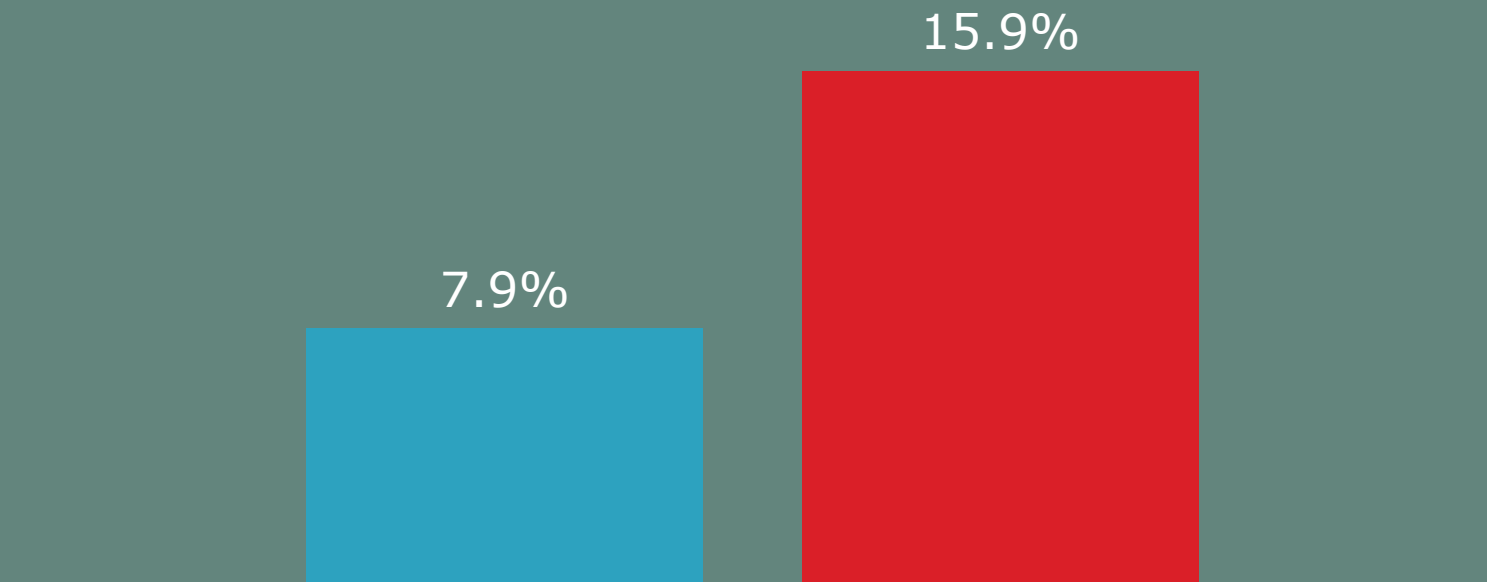
Sociodemographic Profile of the PROTECT Participants, 2012-2014

Sociodemographic Variables	Private	FQHCs
Age		
Median	28.53	23.22
Marital Status		
Single	16.7%	50.0%
Married	68.9%	29.5%
Divorced	1.1%	0.0%
Living with Partner	13.3%	20.5%
Educational Attainment		
High School or Less	4.4%	43.2%
Some College Education	30%	50%
Bachelor Degree or Graduate Studies	65.6%	6.8%
Income		
Less than \$20,000	20%	59.1%
\$20,000 or more	80%	40.9%



Preterm births rate, by Type of Prenatal Clinic: 2012 - 2014

■ Private Practice
■ FQHCs



PROTECT Outreach

- Collaboration with local stakeholders and health care professional groups
 - March of Dimes
 - Puerto Rico Taskforce for Prematurity
 - Environmental Protection Agency (EPA)
- Local Community Health Centers
 - Participation in Health Awareness Week
 - Trainees: Brochures to educate on prenatal care
 - Nutrition and Immunization during pregnancy
 - Maternal wellbeing and child care
- Local environmental advocate groups
 - Citizens of the Karst, Citizens for Environmental Defense





Increasing Awareness

- PROTECT in the Media
 - Puerto Rico and United States
 - Local Newspapers
 - Television
- Collaboration with University of Sacred Heart Puerto Rico
 - Protect documentary
 - Contamination in Puerto Rico and PROTECT approach to discover potential exposure to contaminants during pregnancy
- Training workshops and Conferences





Next Step as **SRP P42 Center** PROTECT Community Engagement Core

- Framework: **Community Based Participatory Research**
- Innovation: Development of “**report back-strategy**”
- Participants, local community and healthcare/public health professionals want to be more proactive – **citizen scientists**
 - Protect mothers from potential exposure to contaminants
 - Raise awareness of importance of reproductive and environmental research in the Puerto Rico
 - PROTECT: empower them and enhance their efforts
 - Engagement, education, prevention and advocacy activities
- **Bigger impact** through networks and partnerships
 - Resources to eliminate health disparities in preterm birth
 - Prenatal care - health promotion strategies with FQHCs



PROTECT Collaborating Groups

PROTECT Leaders



Puerto Rico Taskforce on Prematurity, March of Dimes



Federally Qualified Health Centers Puerto Rico



March of Dimes



Acknowledgments



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Community in Puerto Rico

- PROTECT participants
- **Federally Qualified Health Centers**
 - Morovis, Camuy, Ciales, Quebradillas, Lares
- **Physicians**
 - Dr. González Camacho
 - Dr. Rodríguez Cacho
 - Dr. Capre Febus
 - Dr. José Ortiz

